

CLAIMS

We Claim:

- 1 **1. A lighting system comprising:**
 - 2 **a mixing cavity that mixes light;**
 - 3 **an optical cable attached to the mixing cavity,**
 - 4 **a color sensor attached to the optical cable, the color sensor sampling**
 - 5 **light from within the mixing cavity via the optical cable; and,**
 - 6 **a color controller that controls light color within the mixing cavity, the**
 - 7 **color controller using information from the color sensor as feedback about light**
 - 8 **color within the mixing cavity.**

- 1 **2. A lighting system as in claim 1 wherein within the mixing cavity, light**
 - 2 **emitting diodes of a plurality of colors generate the light that is mixed.**

- 1 **3. A lighting system as in claim 1 wherein within the mixing cavity, light**
 - 2 **emitting diodes of a plurality of colors generate the light that is mixed, the**
 - 3 **plurality of colors including red, green and blue.**

- 1 **4. A lighting system as in claim 1 wherein the optical cable is attached to**
 - 2 **the mixing cavity by a substantially optically clear and transmissive epoxy.**

1 5. A lighting system as in claim 1 wherein the optical cable is attached to
2 the color sensor by a substantially optically clear and transmissive epoxy, a
3 resulting joint being shielded by a substantially optically opaque epoxy.

1 6. A lighting system as in claim 1 wherein a color filter is located in one
2 of the following locations:
3 between the optical cable and the color sensor;
4 within the mixing cavity so as to filter light received by the optical cable.

1 7. A lighting system as in claim 1 wherein the optical cable is a fiber optic
2 cable.

1 8. A lighting system as in claim 1 wherein the optical cable is one of the
2 following:
3 a light guide shielded from external ambient light;
4 a light guide not shielded from external ambient light;
5 a light panel shielded from external ambient light;
6 a light panel not shielded from external ambient light.

1 9. A lighting system comprising:
2 mixing means for mixing light;
3 sensor means for sensing color of light;

4 cable means, connected between the mixing means and the sensor means,
5 for transporting light mixed by the mixing means for being sensed by the sensor
6 means; and,
7 control means for controlling light color of light mixed by the mixing
8 means, the control means using information from the sensor means as feedback
9 about light color within the mixing cavity.

1 10. A lighting system as in claim 9 wherein within the mixing means,
2 light emitting diodes of a plurality of colors generate the light that is mixed.

1 11. A lighting system as in claim 9 wherein within the mixing means,
2 light emitting diodes of a plurality of colors generate the light that is mixed, the
3 plurality of colors including red, green and blue.

1 12. A lighting system as in claim 9 wherein the cable means is attached to
2 the mixing means by a substantially optically clear and transmissive epoxy.

1 13. A lighting system as in claim 9 wherein the cable means is attached to
2 the sensor means by a substantially optically clear and transmissive epoxy, a
3 resulting joint being shielded by a substantially optically opaque epoxy.

1 14. A lighting system as in claim 9 wherein a neutral density filter is
2 located between the cable means and the sensor means.

1 15. A lighting system as in claim 9 wherein a neutral density filter is
2 situated within the mixing means so as to filter light received by the cable
3 means.

1 16. A lighting system as in claim 9 wherein the cable means is a fiber
2 optic cable.

1 17. A method comprising the following:
2 mixing light within a mixing cavity;
3 transporting light from the mixing cavity, through an optical cable, to a
4 color sensor;
5 sampling the transported light by the color sensor; and,
6 controlling light color within the mixing cavity based on information
7 from the transported light sampled by the color sensor.

1 18. A method as in claim 17 additionally comprising the following step:
2 generating light within the mixing cavity by light emitting diodes of a
3 plurality of colors.

1 19. A method as in claim 17 additionally comprising the following step:
2 generating light within the mixing cavity by light emitting diodes of a
3 plurality of colors, wherein the plurality of colors include red, green and blue.

- 1 20. A method as in claim 17 wherein transporting light from the mixing
- 2 cavity, includes passing the light through a neutral density filter.